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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,576

02/13/2007

Bernd Reinsch

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EXAMINER

WILLIAMS, THOMAS J

ART UNIT

PAPER NUMBER

3657

MAIL DATE

DELIVERY MODE

06/25/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/577,576	<b>Applicant(s)</b> REINSCH ET AL.	
	<b>Examiner</b> Thomas J. Williams	<b>Art Unit</b> 3657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/27/06;2/22/08</u> .   | 6) <input type="checkbox"/> Other: ____.                          |

### **DETAILED ACTION**

1. Acknowledgment is made in the receipt of the preliminary amendment, the priority papers and information disclosure statement filed April 27, 2006, the oath filed February 13, 2007 and the information disclosure statement filed February 22, 2008.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 15, 17-19, 21-23, 26, and 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,509,555 to Chiang et al.

Re-claims 15, 17, 18, 21-23, 26 and 28, Chiang et al. disclose a method for manufacturing a composite component, specifically a metal-ceramic component, comprising: producing a porous ceramic blank (the preform is porous and may consist of various ceramics, see column 3 lines 7-13, including ZrO<sub>2</sub>); infiltrating the blank with a metal melt (specifically a CuSi melt, see column 4 lines 55-65); converting the additional metal (Si) via a reaction with at least one reactive component of the blank such that a pore space of a ceramic phase is filled with essentially pure copper, see column 3 lines 64-67 to column 4 lines 1-4.

Re-claim 19, see column 4 lines 12-18, a post heating operation is used.

Re-claims 29 and 30, see column 7 lines 48-51 and table 2.

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***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 16, 20 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al. in view of US 6,835,349 to Pyzik et al.

Re-claims 16, 20 and 27, Chiang et al. fail to specifically teach the ceramic metal composite (CMC) used as a brake rotor or the porosity of the blank (or preform) being at least 50% by volume. Pyzik et al. teach a ceramic metal composite used to make a brake rotor. The CMC has a blank (or perform) with a porosity of at least 50% by volume, see column 4 lines 34-47. This provides sufficient porosity such that during infiltration of the metal alloy the final CMC product is formed having sufficient strength. It would have been obvious to one of ordinary skill in the art to have utilized the CMC of Chiang et al. to manufacture a brake rotor,

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and to have utilized a blank having at least a 50% porosity by volume as taught by Pyzik et al., thus ensuring a brake rotor having sufficient strength.

7. Claims 24, 25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al. in view of US 6,666,310 to Berreth et al.

Re-claims 24, 25 and 31, Chiang et al. fail to teach the ceramic blank or ceramic phase including particles or fibers. Berreth et al. teach a ceramic metal component having a porous ceramic blank provided with fibers, thereby reinforcing the blank preform and final component. It would have been obvious to one of ordinary skill in the art to have provided the porous ceramic blank of Chiang et al. with fibers as taught by Berreth et al., thus increasing the strength of the ceramic metal component.

8. Claims 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al. in view of US 6,458,466 to Jones et al.

Re-claims 32-35, Chiang et al. fail to teach the fracture toughness or thermal conductivity of the component, even though features would be present. Jones et al. teach a ceramic metal component used for a brake element having a fracture toughness of at least  $5.0 \text{ MPam}^{1/2}$  and no more than  $25 \text{ MPam}^{1/2}$ , see column 5 lines 1-7, and a thermal conductivity of at least most preferably  $25 \text{ W/mK}$  and less than  $150 \text{ W/mK}$ , see column 5 lines 22-28. These values provide good performance ranges for the brake component. It would have been obvious to one of ordinary skill in the art to have provided the component of Chiang et al. with the recited performance ranges as taught by Jones et al., thus enabling the component to function for its intended use.

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***Conclusion***

9. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Thomas Williams whose telephone number is 571-272-7128. The examiner can normally be reached on Wednesday-Friday from 6:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi, can be reached at 571-272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-6584.

TJW

/Thomas J. Williams/  
Primary Examiner, Art Unit 3657

June 22, 2010